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Association between Shift Work, Sleep Quality, and Mental Health among Healthcare Workers in Secondary Hospitals in Abuja Municipal Area Council (AMAC), Nigeria

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ABSTRACT

Background: Shift work is essential for continuous healthcare delivery, but it disrupts circadian rhythms and can negatively affect sleep and mental health. In Nigeria, healthcare workers face additional systemic challenges, such as workforce shortages and high patient loads, which may exacerbate these effects. Research on the relationships between shift work, sleep disturbances, and multiple mental health indicators simultaneously in secondary healthcare settings within the Abuja Municipal Area Council (AMAC) is limited.

Objective: This study examined the association between shift work status and sleep disturbances, subjective sleep quality, and selected mental health indicators, stress, burnout, anxiety, and prolonged sadness, among healthcare workers in secondary hospitals in AMAC, Nigeria.

Methods: We conducted a cross-sectional descriptive study of 378 healthcare workers across six secondary health facilities in AMAC. Participants were selected using multistage stratified random sampling, with proportional allocation based on professional cadre. Data were collected via a structured, self-administered electronic questionnaire that assessed shift patterns, sleep disturbances, subjective sleep quality, mental health symptoms, workplace contributing factors, and job-related outcomes. We used descriptive statistics and chi-square tests to assess associations, with statistical significance set at $p < 0.05$.

Results: The majority of respondents (90.5%) worked shift schedules, with rotating shifts being the most common (52.4%). Sleep disturbances were prevalent, particularly non-restorative sleep (31.0%) and difficulty initiating sleep (23.5%). Self-reported stress was the most frequently reported mental health symptom (45.6%), followed by burnout (22.2%), anxiety (13.9%), and prolonged sadness (11.7%). Shift work was significantly associated with poorer subjective sleep quality ($\chi^2 = 17.65$, $p = 0.001$) and higher stress levels ($\chi^2 = 5.90$, $p = 0.015$). We found no significant associations between shift work and burnout, anxiety, or prolonged sadness. High workload (75.4%), long working hours (68.5%), and poor work–life balance (65.3%) were frequently cited as contributing factors.

Conclusion: Shift work among healthcare workers in AMAC is significantly associated with poor sleep quality and elevated stress. However, the relationship between shift work and burnout or anxiety appears to be multifactorial. The high prevalence of sleep disturbances and psychological strain highlights the need for occupation-sensitive scheduling reforms, workload optimization, and strengthened occupational health support systems within secondary healthcare facilities.

Introduction

Shift work is an employment practice designed to guarantee uninterrupted healthcare services at all times by dividing the day into shifts, with groups of workers performing their duties during designated periods. This includes permanent night shifts and rotating schedules[1]. In healthcare, shift work is particularly vital for ensuring the continuous delivery of critical services and patient care[2]. While shift work is an unavoidable aspect of healthcare service delivery. However, the demands of shift-based schedules often disrupt natural circadian rhythms, leading to poor sleep quality, increased fatigue, heightened stress, and impaired performance. These factors increase the risk of accidents and errors[3]. Among healthcare workers (HCWs), the consequences extend beyond performance to include physical and mental health challenges, such as Shift Work Sleep Disorder (SWSD), which further complicates their already demanding roles[4].

Sleep disturbances are among the most commonly reported consequences of shift work. These include difficulty initiating sleep, frequent nocturnal awakenings, early morning awakening, and non-restorative sleep[5]. Beyond discrete sleep problems, overall sleep quality, reflecting subjective satisfaction with sleep duration and restfulness, is increasingly recognized as an important indicator of occupational well-being[6]. Poor sleep quality among healthcare workers has been associated with fatigue, impaired cognitive performance, reduced work efficiency, and increased risk of clinical errors[7]. Shift work, particularly night and rotating shifts, has been identified as a key occupational factor contributing to both sleep disturbances and poor perceived sleep quality[8]. Mental health outcomes are also closely linked to shift work exposure.

Stress is one of the most immediate psychological responses to non-standard work schedules, arising from prolonged working hours, high workload, time pressure, and misalignment between work demands and biological rhythms[9]. Chronic exposure to occupational stress may progress to burnout, a syndrome characterized by emotional exhaustion and reduced professional efficacy, which has been widely reported among healthcare workers engaged in shift work[10]. Anxiety symptoms, including persistent worry and heightened apprehension, have similarly been associated with irregular work schedules, sleep deprivation, and work-related uncertainty[11]. In addition, prolonged sadness and low mood may emerge as downstream psychological consequences of sustained sleep disruption and occupational stress[12]. Although sleep disturbances and mental health problems are often examined separately, evidence suggests that they frequently co-occur among shift-working healthcare professionals[13]. Disrupted sleep may exacerbate stress and anxiety, while psychological distress can further impair sleep quality, creating a bidirectional and reinforcing cycle[9].

The magnitude and pattern of these associations may vary across professional groups within healthcare settings due to differences in workload, shift intensity, clinical responsibility, and autonomy[14]. While these health outcomes are critical, shift work may also influence broader workplace experiences and perceptions among healthcare workers. Factors such as overall job satisfaction and turnover intentions are vital for maintaining a stable healthcare system and may be affected by sustained exposure to non-standard work schedules[15]. Workplace contributing factors, including workload intensity, availability of rest breaks, shift duration, and perceived work–life balance, may further exacerbate sleep disturbances and psychological strain[16]. In addition, awareness of the potential health risks associated with shift work may shape individual coping strategies, help-seeking behavior, and institutional health-promotion needs[17]. In Nigeria, healthcare workers face additional systemic challenges, including workforce shortages, high patient loads, and limited occupational health support, which may intensify the adverse consequences of shift work[11,18]. While previous studies have documented poor sleep quality and psychological distress among healthcare workers in some Nigerian settings[19,20], evidence from Abuja Municipal Area Council (AMAC), which hosts a large concentration of secondary healthcare facilities, remains limited. Moreover, few studies have simultaneously examined shift work in relation to sleep disturbances, subjective sleep quality, and multiple mental health symptom indicators within the same population[21].

This study therefore aimed to examine the association between shift work status and sleep disturbances, subjective sleep quality, and selected mental health symptom indicators (stress, burnout, anxiety, and prolonged sadness), as well as to describe awareness of shift work–related health risks, contributing workplace factors, and job-related outcomes among healthcare workers in secondary hospitals in Abuja Municipal Area Council (AMAC), Nigeria.

Methods

Study Area

The Abuja Municipal Area Council (AMAC) is located on the eastern wing of the Federal Capital Territory (FCT),

Nigeria, encompassing the central and densely populated urban areas of Abuja. It comprises twelve wards and serves as the administrative hub of the FCT with significant commercial activity. There are 14 secondary health facilities in the FCT, of which 6 are located in AMAC. These facilities provide primary and secondary health services to residents and employ approximately 2,000 healthcare workers across various professional cadres. Secondary hospitals in AMAC represent the appropriate level for this study, as they receive referrals from primary facilities and serve as critical training grounds for healthcare workers.

Study Design

This was a cross-sectional descriptive study conducted among healthcare workers in secondary health facilities in AMAC, FCT. The cross-sectional design allowed for the assessment of prevalence rates and associations between shift work and health outcomes at a single point in time.

Study Population

The study population included all healthcare workers employed in secondary health facilities in AMAC and engaged in shift work. The estimated total population of healthcare workers across the 6 facilities in AMAC is 2,000, comprising:

- Doctors: n = 400
- Nurses: n = 600
- Pharmacists: n = 300
- Laboratory Scientists: n = 200
- Other healthcare staff: n = 500

Classification of healthcare professional categories:

Healthcare workers were categorized into professional groups based on their primary clinical role and cadre, as self-reported in the questionnaire. The categories of doctors, nurses, pharmacists, and laboratory scientists were predefined because they represent the major regulated professional cadres routinely involved in shift work and clinical care in secondary health facilities. Respondents who did not belong to these four cadres were classified as *other healthcare professionals*. This group included community health extension workers (CHEWs), health assistants, medical records officers, and radiographers. These cadres were grouped together because of their relatively small numbers individually and their shared involvement in supportive or allied clinical services.

Inclusion Criteria

Participants were included if they met the following criteria:

1. Were healthcare workers (doctors, nurses, pharmacists, laboratory scientists, or other healthcare workers) currently employed in secondary health facilities in AMAC
2. Were currently engaged in shift work, including rotating shifts or night shifts
3. Had at least six (6) months of shift work experience
4. Were aged between 25 and 55 years
5. Provided written informed consent

Exclusion Criteria

Participants were excluded if they met any of the following criteria:

1. Had declined to provide informed consent
2. Had pre-existing chronic sleep disorders (e.g., insomnia, sleep apnea) that could significantly confound assessment of shift work-related sleep disturbances
3. Had active diagnoses of major psychiatric illnesses (e.g., clinical depression, generalized anxiety disorder, schizophrenia) that could confound assessment of shift work-related mental health outcomes

Sample Size Calculation

Sample size was calculated using the Yamane formula22:

$n = N / (1 + N(e)^2)$

Where:

- n = required sample size
- N = total population = 2,000
- e = margin of error = 0.05 (5%)

$n = 2,000 / (1 + 2,000(0.05)^2) = 2,000 / (1 + 5) = 2,000 / 6 = 333$

Proportional allocation was used to ensure that the sample reflected the actual distribution of professional cadres within the workforce. Staff nominal rolls obtained from hospital administrative units were used to determine the proportion of each cadre in the total workforce. These proportions were then applied to the final sample size of 333 to determine the number of participants selected from each category:

Doctors: n = 66 (20% of 333)
Nurses: n = 100 (30% of 333)
Pharmacists: n = 50 (15% of 333)
Laboratory Scientists: n = 33 (10% of 333)
Other healthcare staff: n = 84 (25% of 333)
Total: n = 333 participants

Duty patterns by professional category

Doctors and nurses typically operated rotating shift schedules that included day, evening, night, and on-call duties. Pharmacists primarily worked rotating day and evening shifts, with occasional night or on-call duties depending on staffing levels. Laboratory scientists commonly worked rotating shifts that included extended daytime and night duties to support emergency diagnostic services. Other healthcare professionals generally worked fixed daytime shifts, although some cadres, such as radiographers, participated in rotational or on-call duties.

Sampling Technique

A multistage stratified random sampling technique was employed. First, healthcare workers were stratified by professional cadre. Subsequently, participants were randomly selected from each stratum using proportional allocation based on their representation in the workforce. This approach ensured adequate representation of all major professional categories while reflecting their actual distribution.

Data Collection: Instruments and Methods

Questionnaire Development and Structure

A structured self-administered questionnaire was developed and adapted from established research on shift work, sleep quality, and mental health among healthcare workers. The questionnaire comprised five sections:

Section 1: Socio-demographic Information

- Age, gender, profession, years of experience in healthcare, current shift type, and shift duration

Section 2: Shift Work Patterns

- Type of shifts worked, duration of shifts, frequency of shift changes, experience with night shifts

In this study, *working shifts* was defined as engagement in any work schedule that extends beyond regular daytime working hours (typically 8:00 am–4:00 pm), including night shifts, rotating shifts, or alternating day–night schedules. Respondents who reported working only regular daytime hours were classified as *not working shifts*.

Section 3: Sleep Disturbances

- Specific sleep problems: difficulty falling asleep, frequent awakenings during sleep, waking up too early, feeling unrefreshed after sleep, and overall sleep quality
- Response options: Yes/No, or 5-point scale (Very Good, Good, Fair, Poor, Very Poor)
- Sleep disturbance was defined as the presence of one or more of the above problems

Section 4: Mental Health Indicators

- Stress: Assessed using 3 items measuring work-related pressure and tension (Yes/No response)
- Burnout: Assessed using 2 items measuring emotional exhaustion and reduced professional efficacy (Yes/No response)
- Anxiety: Assessed using 2 items measuring worry and apprehension (Yes/No response)
- Prolonged sadness: Assessed using 1 item measuring persistent low mood (Yes/No response)
- **Assessment of workplace stress:** Workplace stress was classified based on affirmative responses to any of the three stress-related items, indicating the presence of work-related psychological strain.

Section 5: Awareness, Contributing Factors, and Job Outcomes (10 items)

This section assessed awareness of shift work–related health risks, workplace contributing factors (high workload, long working hours, lack of rest breaks, and poor work–life balance), job satisfaction, experience of job dissatisfaction in the past two years, and intention to leave current employment.

Measurement of sleep disturbances

Sleep disturbances were assessed using self-reported symptom-based items adapted from previous occupational health studies. Respondents were asked whether they experienced difficulty falling asleep, frequent awakening during sleep, waking up too early, or feeling unrefreshed after sleep during their current work schedule. Each item was measured using a dichotomous response option (Yes/No). The presence of sleep disturbance was defined as endorsement of at least one of these symptoms.

Measurement of sleep quality

Subjective sleep quality was assessed using a single self-rating item. Respondents were asked to rate their overall sleep quality using a five-point Likert scale (Very good, Good, Fair, Poor, Very poor). This single-item measure has been widely used in epidemiological and occupational health surveys where full standardized sleep instruments are impractical.

Measurement of mental health symptom indicators

Mental health outcomes were assessed using brief self-reported screening items designed to capture symptom presence rather than establish clinical diagnoses. Stress was assessed using three items reflecting work-related pressure and psychological strain. Burnout was assessed using two items capturing emotional exhaustion and reduced

professional efficacy. Anxiety was assessed using two items reflecting persistent worry and apprehension, while prolonged sadness was assessed using one item capturing sustained low mood. All items used dichotomous (Yes/No) response options. For each domain, symptom presence was defined as endorsement of at least one item.

Use of non-standardized instruments

Although standardized psychometric instruments such as the Pittsburgh Sleep Quality Index (PSQI), Depression Anxiety Stress Scales (DASS-21), and Maslach Burnout Inventory (MBI) provide more comprehensive assessments, brief symptom-based screening items with established face validity were used due to feasibility constraints and the need to minimize respondent burden in a busy healthcare workforce. Accordingly, the outcomes represent self-reported symptom indicators rather than formal clinical diagnoses.

Questionnaire Pretesting

The questionnaire was pretested among 30 healthcare workers in three secondary healthcare facilities in Lagos State, selected for their similarity to the study area. The purpose of pretesting was to assess clarity of wording, structure, and comprehension. Healthcare workers reviewed the questionnaire and provided feedback, which led to refinements in wording, item clarity, and overall structure to enhance validity and prevent misinterpretation.

Reliability and Validity

Internal consistency was assessed through Cronbach's alpha23 for multi-item scales:

- Stress items: $\alpha = 0.72$
- Mental health items (combined): $\alpha = 0.68$
- Sleep quality items: $\alpha = 0.71$

These values indicate acceptable internal consistency ($\alpha > 0.60$). Content validity was ensured through expert review by experienced researchers in occupational health and sleep medicine prior to administration. Face validity was demonstrated through the pretesting process, during which participants confirmed that items were clear and relevant to their experiences with shift work, sleep, and mental health.

Data Collection Method

The questionnaire was converted into electronic format using Google Forms to facilitate data collection and real-time data entry. Study information and the questionnaire link were distributed to healthcare workers working in the six secondary health facilities in AMAC via email and departmental notices. Interested healthcare workers who provided informed consent completed the questionnaire electronically. Data were uploaded to a secure server immediately upon completion, ensuring data security and preventing data loss.

Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics including frequencies, percentages, and means were used to characterize the study population and describe the prevalence of sleep disturbances, mental health issues, and awareness levels. Chi-square tests were used to examine associations between shift work patterns (working shifts versus not working shifts) and categorical outcomes including sleep quality, stress, burnout, anxiety, prolonged sadness, workplace stress, job dissatisfaction, overall job satisfaction level, and likelihood of leaving employment. Statistical significance was set at $p < 0.05$. When cells in contingency tables had expected frequencies less than 5, Fisher's exact test was used as appropriate.

Ethical Considerations

Ethical approval was obtained from the Federal Capital Territory Health Research Ethics Committee prior to study commencement (Reference:FHREC/2024/01/06/27-01-25). All participants provided written informed consent before completing the questionnaires. Participants were assured that their participation was entirely voluntary and that all responses would be kept strictly confidential. Confidentiality was ensured by collecting data anonymously without personal identifiers. Responses were stored in password-protected files with access restricted to the research team, and findings were reported in aggregate form to prevent identification of individual participants or facilities.

Results

Socio-demographic characteristics

Baseline demographic characteristics of respondents

A total of 378 healthcare workers participated in the study. The majority of respondents were aged 26–35 years (67.7%), followed by those aged 18–25 years (22.0%), indicating a predominantly young workforce. The gender distribution was relatively balanced, with 52.1% males and 47.9% females. Nurses constituted the largest professional group (29.4%), followed by pharmacists (26.2%), doctors (25.9%), and laboratory scientists (12.7%). More than half of the respondents (51.6%) had between 1 and 5 years of experience in the health sector, while 22.8% had 6–10 years of experience. The majority of participants (90.5%)

reported working shift schedules, with rotating shifts being the most common (52.4%). Eight-hour shifts were the predominant shift duration (55.6%). The baseline socio-demographic and work-related characteristics of respondents are summarized in Table 1.

Table 1: Socio-demographic characteristics of HCWs in AMAC

Variable	Frequency N = 378	Percentage (%)
Age Category		
18-25	83	22.0
26-35	256	67.7
36-45	35	9.3
46-55	4	1.1
Gender		
Male	197	52.1
Female	181	47.9
Profession		
Pharmacist	99	26.2
Nurse	111	29.4
Doctor	98	25.9
Laboratory scientist	48	12.7
Other health professionals	22	5.8
Years in the health sector		
6-10 years	86	22.8
1-5 years	195	51.6
6 months- 1 year	64	16.9
11 - 15 years	25	6.6
Over 15 years	8	2.1
Works shifts Schedule		
No	36	9.5
Yes	342	90.5
Type of shift		
Rotating shift	198	52.4
Day shift	114	30.2
Night shift	30	7.9
Shift duration		
12 hours	65	17.2
8 hours	210	55.6
Not applicable	36	9.5
16 hours	8	2.1
Others	59	15.6

Other healthcare professionals include CHEWs, health assistants, medical records officers, and radiographers. AMAC: Abuja Municipal Area Council

Working shifts refers to engagement in night shifts, rotating shifts, or alternating day–night schedules outside regular daytime working hours.

Sleep Disturbances, Mental Health Symptoms, and Pre-existing Sleep Problems

Among respondents, sleep disturbances were common**,** with the most frequently reported symptoms being feeling unrefreshed after sleep (31.0%) and difficulty falling asleep (23.5%)**.** Frequent awakening during sleep (19.4%) and early morning awakening (19.9%) were also reported.

Regarding mental health symptom indicators, self-reported stress (45.6%) was the most prevalent, followed by burnout (22.2%)**,** anxiety (13.9%)**,** and prolonged sadness (11.7%)**.** Among shift-working respondents, 11.1% reported having pre-existing sleep problems prior to commencing shift work.

Table 2: Frequency and percentage of respondents reporting sleep disturbance symptoms and mental health symptoms among healthcare workers in AMAC, FCT

Sleep disturbance	Frequency	Percentage (%)
Waking up too early	120	19.9
Feeling unrefres hed after sleep	187	31.0
Frequent waking during sleep	117	19.4
Difficulty falling asleep	142	23.5
None	38	6.3
Mental health issues		
Stress	292	45.6
Burnout	142	22.2
Anxiety	89	13.9
Feeling sad or down for a long time	75	11.7
None of the above	38	5.9
Pre-Existing sleep problem		
No	300	79.4
Yes	42	11.1
Not applicable (non-shift workers)	36	9.5

Multiple responses were allowed for sleep disturbance and mental health symptoms; percentages do not sum to 100%.

Association between Shift Work Status and Sleep Quality and Mental Health Outcomes

A statistically significant association was observed between shift work status and subjective sleep quality ($\chi^2 = 17.65$, $p = 0.001$). Shift-working healthcare workers were more likely to report fair or poor sleep quality compared with non-shift workers. Shift work was also significantly associated with self-reported stress ($\chi^2 = 5.90$, $p = 0.015$).No statistically significant associations were found between shift work and burnout, anxiety, or prolonged sadness.

Table 3: Association between Shift Work and Sleep Quality, Stress, and Mental Health Outcomes (N = 378)

Outcome variable	Works shifts (%)	Does Not Work Shifts (%)	Chi-Square (df)	P value	Significance
Sleep quality			17.648(4)	0.001	Yes*
Fair	153 (40.5%)	17 (4.5%)			
Good	99 (26.2%)	11 (2.9%)			
Poor	72 (19%)	2 (0.5%)			
Very good	17 (4.5%)	4 (1.1%)			
Very poor	1 (0.3%)	2 (0.5%)			
Stress			5.896(1)	0.015	Yes*
No	72 (19.0%)	14 (3.7%)			
Yes	270 (71.4%)	22 (5.8%)			
Burnout			1.625(1)	0.202	No*
No	210 (55.6%)	26 (6.9%)			
Yes	132 (34.9%)	10 (2.6%)			
Anxiety			2.061(1)	0.151	No*
No	258 (68.3%)	31 (8.2%)			
Yes	84 (22.2%)	5 (1.3%)			
Prolonged Sadness			0.142(1)	0.706	No*
No	275 (72.8%)	28 (7.4%)			
Yes	67 (17.7%)	8 (2.1%)			

***Statistically significant at $p < 0.05$*

Awareness of Shift Work–related Health Risks

The majority of respondents reported being aware that shift work can negatively affect sleep quality (83.3%) and mental health (87.3%). However, a minority reported lack of awareness of these potential effects.

Table 4: Awareness of shift work–related health risks among respondents (N = 378)

Awareness Question	Yes	No
Awareness that shift work affects sleep quality	315 (83.3%)	63 (16.7%)
Awareness that shift work affects mental health	330 (87.3%)	48 (12.7%)

Workplace Contributing Factors to Sleep and Mental Health Problems

High workload (75.4%) was the most frequently reported contributing factor to sleep disturbances and mental health problems, followed by long working hours (68.5%), poor work–life balance (65.3%), and lack of rest breaks (58.7%).

Table 5: Self-reported contributing factors to sleep disturbances and mental health problems among healthcare workers in AMAC, FCT (multiple responses allowed, N = 378)

Contributing Factors	Frequency	Percentage (%)
Long working hours	259	75.4
Lack of rest breaks	222	68.5
High workload	285	65.3
Poor work-life balance	247	58.7

Distribution of Sleep Quality and Mental Health Symptoms by Professional Cadre

Among shift-working respondents, nurses and doctors accounted for the largest proportions of those reporting poor or fair sleep quality and mental health symptoms, reflecting their higher representation and greater exposure to rotating and night shift duties.

Table 6: Distribution of sleep quality and mental health symptom indicators by healthcare professional cadre among shift-working/On call-duty healthcare workers in AMAC, FCT

	Health profession					
Variable	**Pharmacist**	**Nurse**	**Doctor**	**Laboratory scientist**	**Other health professional**	**Total (100%)**
Sleep quality						
Fair	35(22.9)	45(29.4)	32(20.9)	33(21.6)	8(5.2)	153(40.4%)
Good	27(27.3)	43(43.4)	17(17.2)	7(7.1)	5(5.1)	99(26.1)
Poor	20(27.8)	11(15.3)	30(41.7)	3(4.2)	8(11.1)	72(19.0%)
Very good	2(11.8)	6(35.3)	7(41.2)	1(5.9)	1(5.9)	17(4.5%)
Very poor	0(0)	0(0)	1(0)	0(0)	0(0)	1(0.26%)
Stress						
Yes	68(25.2)	88(32.6)	58(21.5)	38(12.9)	18(6.7)	270(71.4%)
Burnout						
Yes	37(28.0)	42(31.8)	29(22.0)	16(12.1)	8(6.1)	132(35%)
Anxiety						
Yes	24(28.6)	28(33.3)	14(16.7)	10(11.9)	8(9.5)	84(22.2%)
Yes	3(75)	1(25)	0(0)	0(0)	0(0)	4(1.05%)
Prolonged Sadness						
Yes	20(29.9)	19(28.4)	14(20.9)	7(10.4)	7(10.4)	67(17.7%)

Discussion

Findings from the Abuja Municipal Area Council (AMAC), FCT, offer valuable, context-specific evidence regarding the prevalence of sleep disturbances and mental health symptoms among healthcare workers, and how these issues relate to shift work. These observations are consistent with global literature, confirming that sleep problems and psychological distress are common occupational health challenges in healthcare settings. In this study, sleep disturbances were frequently reported, with non-restorative sleep and difficulties initiating and maintaining sleep as the most common complaints. This aligns with global data indicating a high burden of sleep-related problems among healthcare workers, particularly those working demanding schedules and shifts.

A recent meta-analysis estimated that roughly one-third of healthcare workers experience clinically significant sleep disturbances, especially those with demanding schedules and shift work [24], a figure comparable to our findings. Similar prevalence patterns were reported among medical staff in China during the COVID-19 pandemic, where poor sleep quality was common and closely linked to psychological strain[25]. Vietnamese research has also demonstrated that hospital nurses are particularly susceptible to sleep disturbances, with shift work and high workload identified as key contributing factors26. Similar findings have emerged from other African settings.

In Kano, Nigeria, Kolo et al. (2017)19 documented a high prevalence of poor sleep health among healthcare workers, citing shift duties and workload as major contributing factors. Fadeyi et al. (2018)4 also reported a significant prevalence of Shift Work Sleep Disorder (SWSD) among nurses in a Nigerian teaching hospital, significantly associated with night duties and rotating schedules. Beyond Nigeria, Ethiopian research found that approximately one-third of nurses met the criteria for shift work sleep disorder, with frequent night shifts strongly associated with sleep disturbance[27].Collectively, these studies suggest that sleep disturbances among healthcare workers in AMAC reflect a widespread, global occupational health concern rather than an isolated issue. Mental health symptoms were commonly reported, with stress being the most prominent psychological concern, followed by burnout, anxiety, and prolonged sadness. These findings align with international evidence indicating high levels of psychological distress among healthcare workers, particularly stress-related symptoms[28].

Studies in Italy and India have similarly shown that healthcare workers with sleep disturbances are more likely to report anxiety and psychological distress, highlighting the interconnectedness of sleep and mental health in this population[28,29]. Similar patterns have been documented across African healthcare settings. For example, high levels of burnout and psychological distress have been reported among nurses in Nigerian tertiary institutions20, and in Ghana, occupational stress among nurses is significantly associated with shift patterns and workload intensity[30]. These findings reinforce the broader continental trend linking sleep disruption, occupational stress, and mental health challenges among healthcare professionals. Although this study did not establish causal relationships, the co-occurrence of sleep disturbances and mental health symptoms is consistent with existing epidemiological evidence. Specifically, shift work status was significantly associated with poorer subjective sleep quality and higher levels of self-reported stress. This aligns with a systematic review by Salari et al. 31, which demonstrated that shift-working healthcare workers are at increased risk of poor sleep quality due to circadian disruption and irregular work schedules. Similar associations between shift work, sleep disruption, and stress have been reported among healthcare workers in China, where shift workers exhibited significantly poorer sleep quality and higher stress levels compared to non-shift workers[32]. In contrast, this study found no statistically significant associations between shift work and burnout, anxiety, or prolonged sadness. This pattern has also been reported in other research, suggesting that stress may be a more immediate psychological response to shift work, while burnout and anxiety are influenced by a wider range of organizational, personal, and contextual factors[9].

These findings are consistent with studies from Ethiopia, where shift work among healthcare professionals was significantly associated with sleep disorders and elevated stress levels33. Similarly, research in Ghana and South Africa has demonstrated that irregular shift patterns correlate with increased anxiety and sleep disturbances34. The absence of significant associations with burnout and anxiety in the present study aligns with findings from Nigeria and South Africa, where burnout was influenced by broader organizational and contextual factors rather than shift work status alone[33,35], further supporting the idea that stress may be a more immediate psychological response to shift work, while burnout and anxiety are influenced by a wider range of factors. With respect to job-related outcomes, this study found no significant association between shift work status and job dissatisfaction or intention to leave employment, although a higher proportion of shift workers reported dissatisfaction compared with non-shift workers. This finding aligns with evidence from Saudi Arabia indicating that the relationship

between shift work and job satisfaction is complex and often moderated by workplace environment, remuneration, career progression, and organizational support rather than shift work alone[36]. Differences in sleep and mental health symptom patterns across professional cadres were also observed. Doctors reported the highest proportion of poor sleep quality, while nurses exhibited the highest prevalence of stress, burnout, and anxiety. These findings mirror global evidence identifying doctors and nurses as particularly vulnerable to sleep disruption and psychological strain due to high clinical workload, emotional labour, and frequent exposure to shift work[24,26]. Pharmacists in this study also reported notable levels of prolonged sadness, which is consistent with reports from the COVID-19 period suggesting that increased workload, staffing shortages, and ethical challenges may contribute to psychological distress among pharmacists[37]. Although these cadre-specific findings are descriptive, they highlight the need for occupation-sensitive approaches to workplace health interventions.

Conclusion

This study reveals a high prevalence of sleep disturbances and mental health symptoms among healthcare workers in secondary health facilities within the Abuja Municipal Area Council (AMAC), Nigeria. Shift work was significantly associated with poorer subjective sleep quality and elevated self-reported stress levels. However, no significant associations were found with burnout, anxiety, or prolonged sadness. Participants frequently reported workplace stressors, including high workload, long working hours, poor work–life balance, and insufficient rest breaks. Despite a strong awareness of shift work-related health risks, persistent sleep and stress symptoms indicate ongoing occupational health concerns. Although the cross-sectional design limits the establishment of causal relationships, these findings offer crucial insights for developing effective workplace health strategies.

Recommendations

To address these issues, healthcare facilities should adopt more supportive shift scheduling practices and optimize staffing levels to alleviate excessive workload. They should also guarantee protected rest breaks to facilitate recovery. Furthermore, strengthening occupational health services to incorporate routine screening for sleep disturbances and work-related stress could prove beneficial. This should be coupled with targeted education on sleep hygiene and stress management, specifically for shift workers. Future research employing longitudinal designs and validated assessment tools is needed to clarify temporal relationships and assess the efficacy of workplace interventions.

Limitations

Several limitations should be considered when interpreting the results of this study. First, the cross-sectional design prevents any determination of causality or temporal relationships between shift work, sleep disturbances, and mental health outcomes. Second, the reliance on self-reported questionnaires introduces the potential for recall and social desirability biases, especially concerning mental health symptoms. Third, the use of brief, non-standardized symptom-based screening items, instead of validated psychometric instruments, restricts diagnostic precision and limits comparability with other studies. Fourth, the unequal sample sizes across different professional groups, along with variations in duty patterns (including rotating shifts and on-call duties), may have affected the observed distributions and associations. Fifth, the study's focus on secondary health facilities within a single area council may limit the generalizability of the findings to other healthcare settings or regions. Finally, the study did not assess potential confounding factors such as individual coping strategies, lifestyle behaviors, and organizational support systems, all of which could influence sleep and mental health outcomes.

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